

REMARKS

Claims 1-30 are pending. Claims 1-30 are rejected under 35 U.S.C. 103(a).
Reconsideration in view of the following remarks is respectfully requested.

Rejection Under 35 U.S.C. § 103(a)

Claims 1-13, 23-27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the published article "Bistatic Laptop Radar," Robert F. Ogrodnik, IEEE 1996 National Radar Convention, Ann Arbor, Michigan, May 13-16, 1996, 369-73 (hereinafter "Ogrodnik") in view of U.S. Patent No. 5,252,980 to Gray et al. (hereinafter "Gray et al."). The rejection is respectfully traversed.

To establish a prima facie case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be some expectation of success. Third, the prior art references must disclose or suggest all of the claimed features. MPEP 2143. Applicants respectfully submit that these criteria have not been met.

Ogrodnik discloses the general concepts of coherent noncooperative bistatics technology that utilizes broadband signals to conduct integrated surveillance and target imaging. The Office Action indicates Ogrodnik's first and second processing is functionally equivalent to the front-end and backend processing as set forth in the claims of the present invention.

The present invention recites in claim 1, "a front-end processing subsystem to determine a radial velocity of the object based on the received transmissions and to buffer digitized transmission replicas of the received transmissions; and a back-end processing subsystem to receive the digitized transmission replicas of the received transmissions to determine object state estimates based on the determined radial velocity." The separate subsystems are included to increase modularity and to enable specialized processing hardware and software to be implemented for the logically discrete tasks performed by each subsystem. For example, having the processors separate allows enhanced system robustness and increases ease of installation.

While Ogrodnik discusses separate processing modes, it does not address physically separate submodules. Particularly, referring to the sole physical embodiment mentioned in the

article, Ogrodnik describes an airborne platform that includes a single electronic support measures (ESM) module that provides output to a multi-target tracker, GPS/navigation computer, and target tracking display monitor. (Ogrodnik, p. 372). The separate subsystems of the present invention are a feature not disclosed or suggested by Ogrodnik; thus the desired benefits, such as enhanced system robustness and increased ease of installation, are not enabled by Ogrodnik. Furthermore, Ogrodnik does not disclose or suggest the concept of buffering digitized transmission replicas.

The deficiencies of Ogrodnik with respect to claim 1 are not supplied by Gray et al. Gray et al. discloses a tristatic radar tracking system with an A/D converter that "converts the amplified analog reference signals and the amplified analog target echo return signals into their digital equivalent for the signal processor 303. The signal processor extracts the target signals from the noise and compares the digital target echo return signals with the digital reference signals to produce an estimate of target signal Doppler shift." Also, "The location processor 304 is a general purpose data Processor which uses the algorithms of the present invention on data received from the signal processor 300 [sic] to compute thereby an estimate of the target location and trajectory." In other words, Gray et al. teaches a converter, a processor to estimate Doppler shift, and a data processor to compute location and trajectory.

Gray et al. does not teach the concept separate subsystems to first determine the radial velocity of a target in one subsystem and next to determine the object state estimates based on the determined radial velocity in a separate subsystem. Furthermore, Gray et al. does not address the concept of buffering digitized transmissions nor buffering between separate subsystems. Applicants submit buffering data flow of digitized transmissions is not an obvious variation, as others have utilized immediate transport of data for real-time processing to limit the burden of data storage. (See, e.g., John D. Sahr et al, "The Manastash Ridge radar: A passive bistatic radar for upper atmospheric radio science," *Radio Science*, Vol. 32, No. 6, pp. 2345-58 (1997) at 2355.)

Regarding claim 6 of the present invention, the claim recites, "a front-end processing subsystem to determine a frequency-difference-of-arrival for said digitized signals and to buffer digitized transmission replicas of said digitized signals; and a back-end processing subsystem to received the digitized transmission replicas and to determine positional information for said object in accordance with said frequency-difference-of-arrival." As discussed above, Ogrodnik

does not disclose or suggest the concepts of physically separate submodules or buffering digitized transmission replicas, as recited in claim 6. These deficiencies are not provided in Gray et al., since Gray et al. does not suggest the concept of buffering digitized transmissions or buffering between separate subsystems.

Regarding claim 23 of the present invention, the claim recites, "buffering digitized transmission replicas of said scattered transmissions and said reference transmissions...." Ogrodnik does not disclose or suggest the concepts buffering digitized transmission replicas, as recited in claim 23. Gray et al. discloses the concept of converting amplified analog reference signals and the amplified analog target echo return signals into their digital equivalent. However, Gray et al. does not disclose or suggest buffering digitized transmission replicas. Applicants submit buffering data flow of digitized transmissions is not an obvious variation, as others have utilized immediate transport of data for real-time processing to limit the burden of data storage.

Regarding claim 30 of the present invention, the claim recites, "means for buffering digitized transmission replicas of said scattered transmissions and said reference transmissions, wherein said buffered digitized transmission replicas can be transmitted for analysis upon request by a user...." Ogrodnik does not disclose or suggest the concept of buffering digitized transmission replicas as recited in claim 30. Gray et al. discloses the concept of converting amplified analog reference signals and the amplified analog target echo return signals into their digital equivalent. Gray et al. further discloses that updated estimates of a target position can be compared with previous position estimates. (Col. 8, lines 41-46). However, Gray et al. does not disclose or suggest buffering the actual digitized transmission replicas used to establish the estimated target positions.

In light of the foregoing, Applicants respectfully submit that claims 1, 6, 23 and 30 are not rendered obvious by Ogrodnik in view of Gray et al. Claims 2-5, depend from independent claim 1, claims 7-13 depend from claim 6, and claims 24-27 depend from claim 23. If an independent claim is nonobvious, then any claim depending from the independent claim is nonobvious. MPEP 2143.03. Thus, it is respectfully submitted that dependant claims 2-5, 7-13 and 24-27 are distinguishable over the applied reference for at least the reasons described above. Therefore, withdrawal of the rejection of claims 1-13 and 23-27 is respectfully requested.

Claims 14-22, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogrodnik in view of Gray et al. and U.S. Patent No. 4,063,073 to Strayer (hereinafter "Strayer"). The rejection is respectfully traversed.

Strayer describes a computer controlled system that prevents collisions between different aircraft, or aircraft and terrain, by using a conflict prediction algorithm to predict and alert aircraft of a potential conflict.

Claims 14 and 22 both recite a method including the step of "buffering digitized transmission replicas of said received transmissions, wherein said digitized replicas are received by a back-end processing subsystem." As discussed above, the concept of buffering digitized transmission replicas between physically separate subsystems is not disclosed or suggested by either Ogrodnik or Gray et al. Strayer also does not provide these deficiencies, since Strayer does not suggest the concept of buffering digitized transmissions or buffering between separate subsystems.

Regarding claims 28 and 29 of the present invention, the claims recite a system including "means for buffering digitized transmission replicas of said received transmissions, wherein said digitized replicas are received by a back-end processing subsystem." As discussed above, neither Ogrodnik nor Gray et al. disclose or suggest buffering the actual digitized transmission replicas used to establish the estimated target positions. Strayer's disclosure of conflict prediction and aircraft alert system also does not suggest or disclose this deficiency.

In light of the foregoing, Applicants respectfully submit that claims 14, 22, 28 and 29 are not rendered obvious by Ogrodnik in view of Gray et al. and Strayer. Claims 15-21 depend from independent claim 14. If an independent claim is nonobvious, then any claim depending from the independent claim is nonobvious. MPEP 2143.03. Thus, it is respectfully submitted that dependant claims 15-21 are distinguishable over the applied reference for at least the reasons described above. Therefore, withdrawal of the rejection of claims 14-22, 28 and 29 is respectfully requested.

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CONCLUSION

In view of the foregoing, Applicants submit that this application is in condition for allowance, and such disposition is earnestly solicited. If the Examiner believes that the prosecution of this case might be advanced by discussing the application with Applicants' representative, in person, or over the telephone, we would welcome the opportunity to do so.

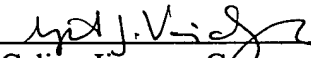
EXCEPT for fees payable under 37 CFR §1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application, including fees due under 37 CFR §1.16 and 1.17 which may be required, including any required extension of time fees, or credit, any overpayment to deposit account No. 50-1349. This paragraph is intended to be a constructive petition for extension of time in accordance with 37 CFR §1.136(a)(3).

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1349.

Respectfully submitted,

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